

**Notice of Allowability**

Application No.

10/784,014

Applicant(s)

HASEGAWA ET AL.

Examiner

A. J. HEINZ

Art Unit

2627

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to papers filed 4.28/06.
2. ☒ The allowed claim(s) is/are 1-52.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some\* c) ☐ None of the:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date 5/4/04&2/20/04
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

A. J. HEINZ  
Primary Examiner  
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EXAMINER'S STATEMENT OF REASONS FOR ALLOWANCE

And

EXAMINER'S AMENDMENT/COMMENT

1. The following is an examiner's statement of reasons for allowance: the prior art does not show or reasonably teach/suggest to one of ordinary skill in the art to which said subject matter pertains to, the combination of structure including in a magnetic sensor comprising:

a nonmagnetic metal layer including at least one element selected from the group consisting of Ru, Re, Os, Ti, Rh, Ir, Pd, Pt, and Al;

a pinned magnetic layer including first and second magnetic sublayers with a nonmagnetic interlayer disposed therebetween, the first magnetic sublayer in contact with the non-magnetic metal layer;

a free magnetic layer; and

a nonmagnetic conductive layer disposed between the pinned magnetic layer and the free magnetic layer, the first magnetic sublayer disposed farthest from the nonmagnetic conductive layer,

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wherein crystals in the nonmagnetic metal layer and crystals in the first magnetic sublayer are oriented in an epitaxial or a heteroepitaxial state; and

an end face of the pinned magnetic layer is open and is configured to oppose a face of a recording medium;

or

a nonmagnetic metal layer;

a pinned magnetic layer including first and second magnetic sublayers with a nonmagnetic interlayer disposed therebetween, the first magnetic sublayer in contact with the non-magnetic metal layer;

a free magnetic layer; and

a nonmagnetic conductive layer disposed between the pinned magnetic layer and the free magnetic layer, the first magnetic sublayer disposed farthest from the nonmagnetic conductive layer,

wherein the nonmagnetic metal layer and the first magnetic sublayer have crystalline lattices in which a difference between a nearest interatomic distance of the nonmagnetic metal layer in a plane parallel to a first boundary between the nonmagnetic metal layer and the first magnetic

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sublayer and a nearest interatomic distance of the first magnetic sublayer of the pinned magnetic layer in the plane parallel to the first boundary divided by the nearest interatomic distance of the first magnetic sublayer is in the range of about 0.05 to 0.20, and

an end face of the pinned magnetic layer is open and is configured to oppose a face of a recording medium.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

2. Claims 1-39 are directed to an allowable product. Pursuant to the procedures set forth in MPEP § 821.04(b), claims 40-52, directed to the process of making or using the allowable product, previously withdrawn from consideration as a result of a restriction requirement, are hereby rejoined and fully examined for patentability under 37 CFR 1.104.

Because a claimed invention previously withdrawn from consideration under 37 CFR 1.142 has been rejoined, the restriction requirement between groups I&II as set forth in the

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Office action mailed on 4/28/06 is hereby withdrawn. In view of the withdrawal of the restriction requirement as to the rejoined inventions, applicant(s) are advised that if any claims including all the limitations of an allowable product claim or rejoined process claim are presented in a continuation or divisional application, such claims may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application. Once the restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. See *In re Ziegler*, 443 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.

3. If applicant has filed an information disclosure statement and this instant office action does not contain an initialed-off copy (or copies) of all such filed IDS's (or at least a comment to the disposition of such IDS'S in the body of the office action itself) applicant should apprise the examiner of such missing documentation [to the IDS's] in response to this office action so that the examiner can take appropriate action to supply same to the applicant.

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4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. J. HEINZ whose telephone number is (571) 272-7587. The examiner can normally be reached on M-F 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DWAYNE BOST can be reached on (571)272-7023.

The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A. J. HEINZ  
Primary Examiner  
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A handwritten signature in cursive script, appearing to read "A. J. Heinz", with a long, sweeping underline.